

Microchip	Filter specification	TFS2250A	1/5
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Measurement condition

Ambient temperature T_A :	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	50	Ω
Output:	50	Ω

Characteristics

Remark:

The nominal frequency f_N is fixed at 2250 MHz without any tolerance or limit. The insertion loss a_e is defined as loss value determined at f_N . The reference level for the relative attenuation a_{rel} is the insertion loss a_e . The values of relative attenuation a_{rel} are guaranteed over the whole operating temperature range. The frequency shift of the filter within the operating temperature range is included in the production tolerance scheme.

D a t a		typ. value		tolerance / limit		
Insertion loss at f_N	a_e	3.6	dB	max.	5.0	dB
Nominal frequency	f_N	-			2250.0	MHz
Passband 1	PB1	-			$f_N \pm 50.0$	MHz
Passband ripple within PB1	PBR1	0.1	dB	max.	1.0	dB
Passband variation within PB1	PBV1	1.1	dB	max.	3.0	dB
Return loss within PB1		9.7	dB	min.	8.5	dB
Group delay ripple within PB1 in any 10 MHz segment	GDR1	2.0	ns	max.	5.0	ns
Passband 2	PB2	-			$f_N \pm 25.0$	MHz
Passband ripple within PB2	PBR2	0.1	dB	max.	1.0	dB
Passband variation within PB2	PBV2	0.2	dB	max.	1.0	dB
Relative attenuation	a_{rel}					
10 MHz ... 1000 MHz		38	dB	min.	35	dB
1000 MHz ... 2000 MHz		38	dB	min.	20	dB
2500 MHz ... 3000 MHz		42	dB	min.	35	dB
3000 MHz ... 3500 MHz		36	dB	min.	30	dB
3500 MHz ... 4000 MHz		31	dB	min.	28	dB
4000 MHz ... 5500 MHz		23	dB	min.	20	dB
5500 MHz ... 6000 MHz		22	dB	min.	10	dB
Input power level within PB1		-		max.	10	dBm
Operating temperature range	OTR	-			- 40 °C ... + 125 °C	
Storage temperature range		-			- 55 °C ... + 125 °C	
Temperature coefficient of frequency	TC_f *)	-76	ppm/K			-

*) $\Delta f = TC_f(T - T_A)f_N$

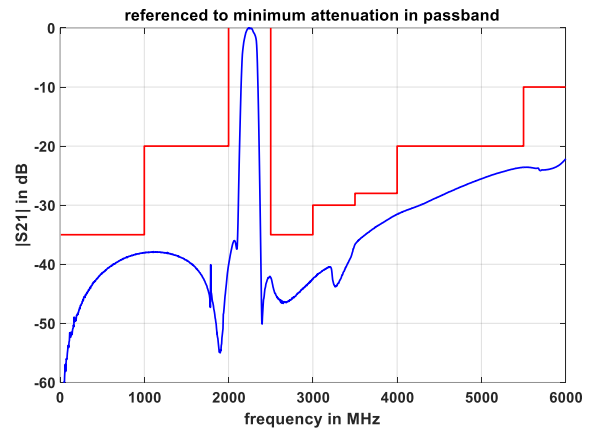
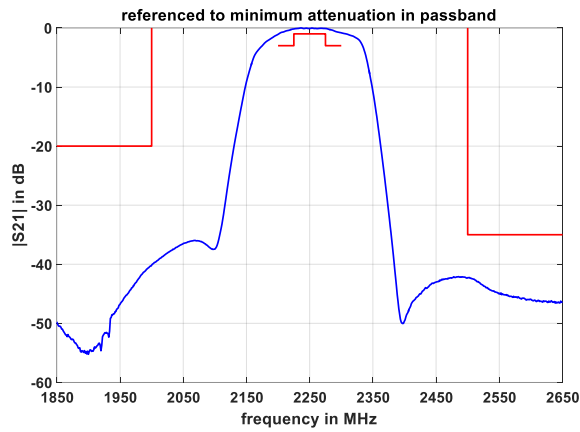
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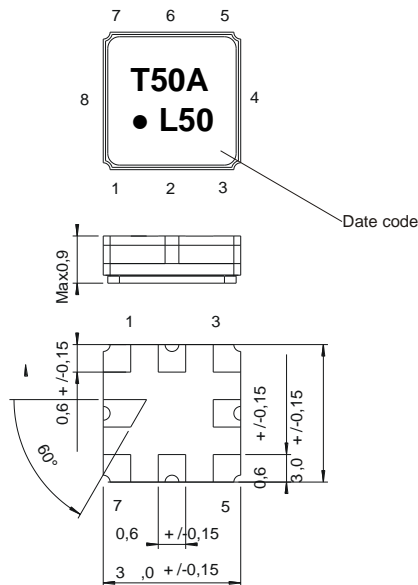
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Filter characteristic



Construction and pin connection

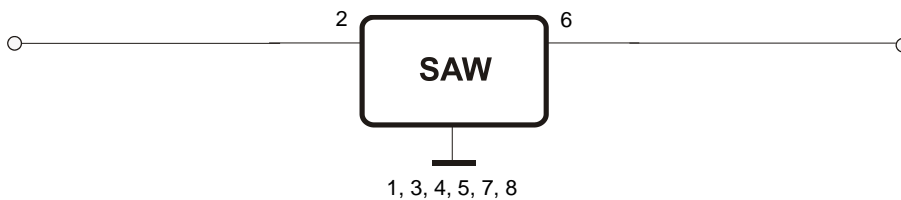
(All dimensions in mm)



- 1 Ground
- 2 Input
- 3 Ground
- 4 Ground
- 5 Ground
- 6 Output
- 7 Ground
- 8 Ground

Date code: Year + week
 L 2019
 M 2020
 N 2021
 ...

50 Ohm Test circuit



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Stability characteristics, reliability

After the following tests the filter shall meet the whole specification:

1. Shock: 500 g, 1 ms, half sine wave, 3 shocks each plane;
DIN IEC 60068 T2 - 27
2. Vibration: 10 Hz to 2000 Hz, 0.35 mm or 5 g respectively, 1 octave per min, 10 cycles per plane, 3 planes; DIN IEC 60068 T2 - 6
3. Change of temperature: -55 °C to 125 °C / 15 min. each / 100 cycles
DIN IEC 60068 part 2 – 14 Test N
4. Resistance to solder heat (reflow): reflow possible: three times max.;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;
5. SAW devices are Electrostatic Discharge (ESD) sensitive devices.

This filter is RoHS compliant (2011/65/EU)

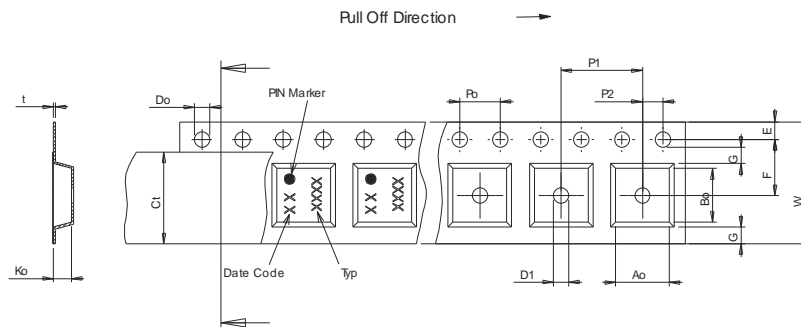
Packing

Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

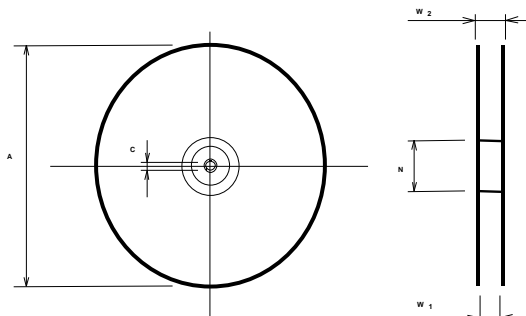
Tape (all dimensions in mm)

- W : 8.00 ±0.3
- Po : 4.00 ±0.1
- Do : 1.50 +0.1/-0
- E : 1.75 ±0.1
- F : 3.50 ±0.05
- G(min) : 0.75
- P2 : 2.00 ±0.05
- P1 : 4.00 ±0.1
- D1(min) : 1.50
- Ao : 3.25 ±0.1
- Bo : 3.25 ±0.1
- Ct : 5.30 ±0.1
- Ko : 1.50 ±0.1
- t : 0.25 ±0.05



Reel (all dimensions in mm)

- A : 330 or 180
- W1 : 8.40 +1.5/-0
- W2(max) : 14.40
- N(min) : 60.00
- C : 13.0 ±0.2



The minimum bending radius is 45 mm.

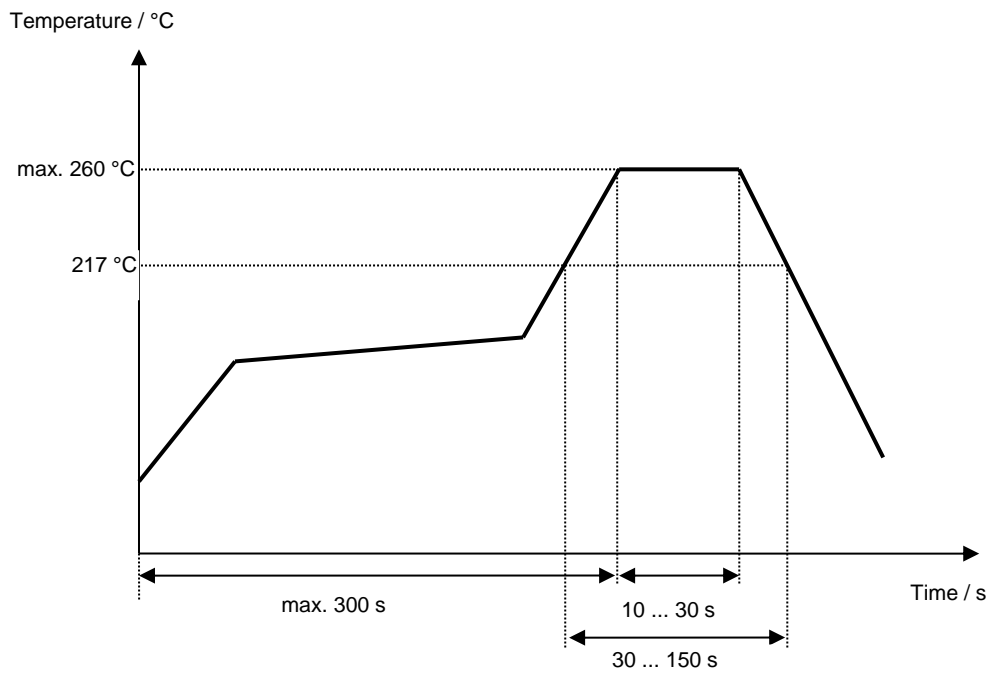
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Air reflow temperature conditions

Conditions	Exposure
Average ramp-up rate (30 °C to 217 °C)	less than 3 °C / second
> 100 °C	between 300 and 600 seconds
> 150 °C	between 240 and 500 seconds
> 217 °C	between 30 and 150 seconds
Peak temperature	max. 260 °C
Time within 5 °C of actual peak temperature	between 10 and 30 seconds
Cool-down rate (Peak to 50 °C)	less than 6 °C / second
Time from 30 °C to Peak temperature	no greater than 300 seconds

Chip-mount air reflow profile



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Microchip**Filter specification****TFS2250A****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	P. Jaster	17.10.2018
2.0	- Update of relative attenuation (3500 MHz – 5500 MHz)	A. Molke	11.06.2019
2.1	- Change from development spec to filter spec - Typical values added - Filter characteristic added	A. Molke	10.12.2019

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